AEC-67160D
Ultra160 SCSI Adapter

User's Manual

— Version: 1.0 —

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Chapter 1 Introduction

1.1 Overview

AEC-67160D is particularly developed for ACARD's ARS-3010, the Disk Box. It is a SCSI Ultra160 LVD (Low Voltage Differential) adapter acting as a stable and highly effective host interface for the Disk Box.

1.2 Features

AEC-67160D has the following characteristics.

- PCI Bus Master relieving CPU from I/O task loading
- Synchronous transfer rate up to 160MB/sec
- Supports low profile for rack mount IPC
- Powerful advanced setup function
- Supports Scatter\Gather operation
- Automatic FIFO threshold selection
- Automatic termination control

1.3 Specifications

The specifications of AEC-67160D are listed below.

- Operating System --- Win 95/98/ME, Win NT/2000/XP, Linux
- Power required --- Voltage : 5V ± 5%
- Power consumption --- 0.4W (standby) ; 2.85W(max.)
- Environment --- Operating temperature in-between 0°C ~ 70°C
- Dimensions --- 13cm (L) × 6.5cm (W)
- Connector --- One 68-pin external Ultra 160 LVD SCSI connector
- Terminator --- Active

Chapter 2 Installation

2.1 Installing AEC-67160D

Please follow the 7 steps given below to install AEC-67160D.

Step 1: Turn off the power of host PC or DVR, ect.

Step 2: Remove the power cord and the cable for external device like ARS-3010.

Step 3: Remove the outer shell of the host PC. Please refer to related manual.

Step 4: Choose a spare PCI expansion slot. Unscrew and remove the cover.

Step 5: Take AEC-67160D out of the antistatic bag. Hold its metal bracket carefully in order not to let the human static damage the adapter.

Step 6: Insert AEC-67160D into the PCI expansion slot (don't damage the PCI edge), and screw its metal bracket from outside.

Step 7: Replace the host PC's outer shell. Then, connect the external SCSI device according to 2.2.

2.2 Connecting ARS-3010

Please follow the 2 steps given below to connect ARS-3010, the Disk Box.

Step 1: Connect ARS-3010 to the external connector of AEC-67160D with a SCSI LVD cable.

Step 2: After installing ARS-3010 (hardware installation and setting), turn on the power of all serial ARS-3010s, and power on the host PC.

Chapter 3 BIOS Settings

After powering on the host PC, it will detect the newly installed AEC-67160D, and a screen like the following one will appear. Now you can press <F1> or <F10> to enter BIOS to do related settings.

PCI MASTER ULTRA160 LVD/SE SCSI ADAPTER

ACARD PCI MASTER Ultra160 LVD/SE SCSI ADAPTER
Model : AEC-67160D 07-29-2002 Ver 1.03.0

Press <F1> or <F10> To Issue Setup Utility
ROM Address : C8000h
I/O Ports : 6000
IRQ : 11 (Level)

NOTICE: If the screen shows "the IRQ Number : xx.....ERROR, tested UNMATCH!!", it means that the preset SCSI Adapter IRQ is the same with PCI Slot IRQ. You can insert AEC-67160D into another PCI slot, or modify the INT and IRQ settings in BIOS.

3.1 SCSI DEVICES

After entering BIOS, a screen like Figure 3-1 will appear.

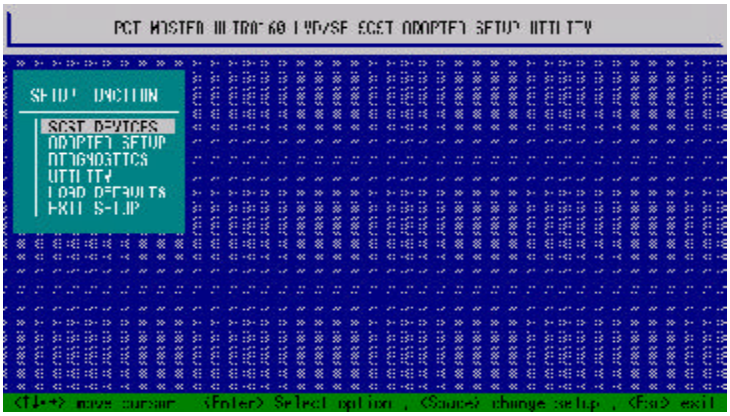

Figure 3-1

Press **Enter** to see all SCSI devices connected to the adapter as the following figure shows. Press any key to return to Setup Utility Screen. Use ↑↓ ←→ to move the cursor.

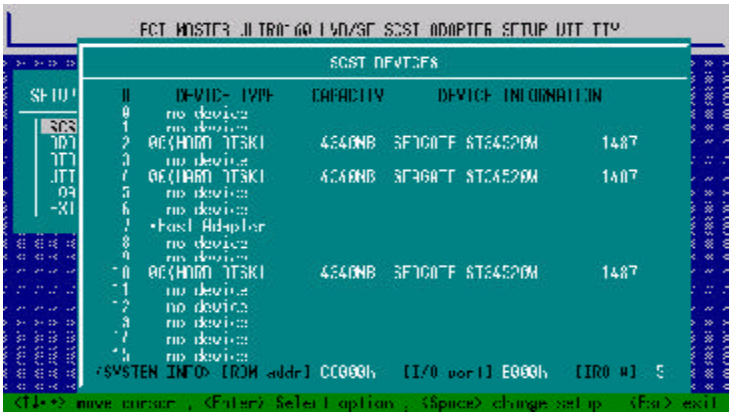

Figure 3-2

3.2 ADAPTER SETUP

Move the cursor to ADAPTER SETUP, and press **Enter** to enter the following screen.

PCI MASTER ULTRA160 LVD/SE SCSI ADAPTER SETUP UTILITY
ADAPTER PARAMETERS
Host Adapter SCSI ID 7
Host Adapter BIOS Enable
PCI Master-DMA Burst Mode Enable
Host Adapter SCSI Termination Automatic
Support Removable Disk As Fixed Disk Disable
Support LUN# 0 Upto Max LUN# As 1
Disk Box Optimize Enable
SCSI Device Disconnection Enable
Extended BIOS Transfer For Drives > 1GB Enable
CD-ROM Bootable Disable
SCSI Speed Setup Press [Enter]
Additional Setup Functions Press [Enter]
SCSI ID# 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Include In Scan Y Y Y Y Y Y Y - Y Y Y Y Y Y Y Y
<Enter> Select option <Space> change setup <Esc> exit

Figure 3-3

- ✧ Host Adapter SCSI ID: It is adapter ID number. Default is 7.
- ✧ Host Adapter BIOS: It is the host adapter BIOS you're using. Default is Enable.
- ✧ PCI Master-DMA Burst Mode: It is the burst mode for PCI Master-DMA. Default is Enable.
- ✧ Host Adapter SCSI Termination: It is to activate the SCSI terminator or not. Default is Automatic.
- ✧ Support Removable Disk AS Fixed Disk: It is to use a removable disk as fixed disk. Default is Disable.
- ✧ Support Multiple LUN: It is to use multiple LUN or not. Default is 1. This will make all 4 hard drives detected.
- ✧ Disk Box Optimize: It can be set to automatically detect the numbers of connected Disk Boxes so as to adjust the transfer rate. Default is Enable. If you set as Disable, you need to adjust the transfer rate manually.
- ✧ SCSI Device Disconnection: It is set to support SCSI device disconnection.

Default is Enable.

- ✧ Extended BIOS Transfer For Drives > 1GB: It is set to support drives bigger than 1GB. Default is Enable. However, you can disable it to accommodate to old drives.
- ✧ CD-ROM Bootable: It can be set to boot CD-ROM, but default is Disable.
- ✧ SCSI Speed Setup: Please refer to 3.2.1.
- ✧ Additional Setup Functions: Please refer to 3.2.2.
- ✧ SCSI ID# / Include In Scan: It is to select a needed ID number for scanning.

3.2.1 SCSI Speed Setup

Pressing **Enter** in ID/XFER lets you select an individual host to device transfer rate (.XFER RATE) for each device. If you set "Disk Box Optimize" in 3.2 as Enable, you don't need this setup.

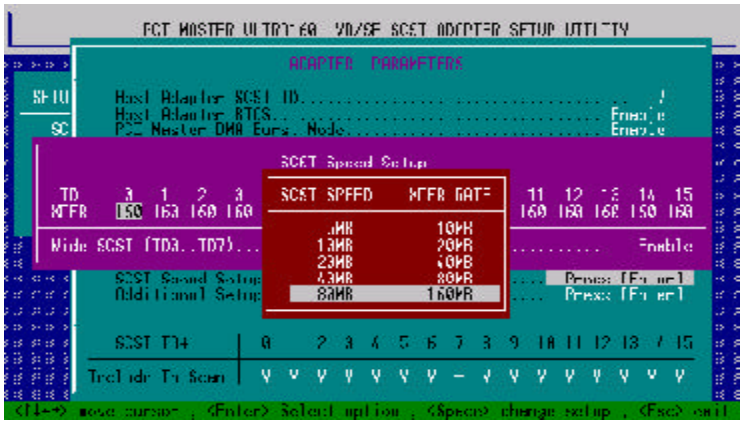

Figure 3-4

3.2.2 Additional Setup Functions

Reserve the default if there is no special condition.

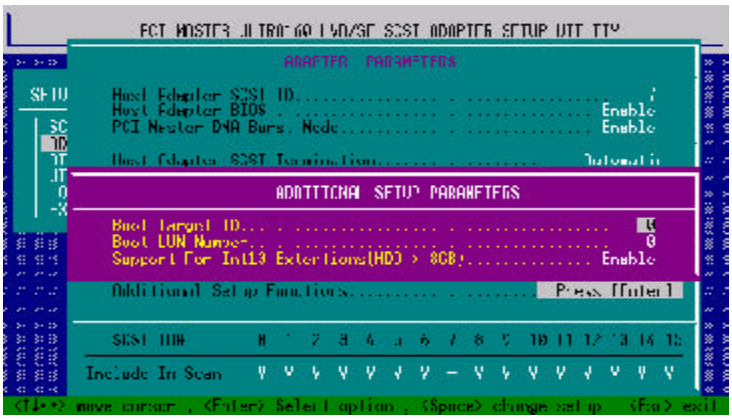
ADAPTER PARAMETERS
Host Adapter SCSI ID
Host Adapter BIOS Enable
PCI Master DMA Burst Mode Enable
ADDITIONAL SETUP PARAMETERS
Boot Target ID 0
Boot LUN Number 0
Support For Int13 Extentions(HD) > 8GB Enable
Additional Setup Functions Press [Enter]
SCSI ID 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Include In Scan Y Y Y Y Y Y Y - Y Y Y Y Y Y Y Y
<Enter> Select option , <Space> change setup <Esc> exit

Figure 3-5

3.3 DIAGNOSTICS

On Figure 3-1, SETUP UTILITY, use ↓ to enter DIAGNOSTICS. This function can reveal the protocol of AEC-67160D.

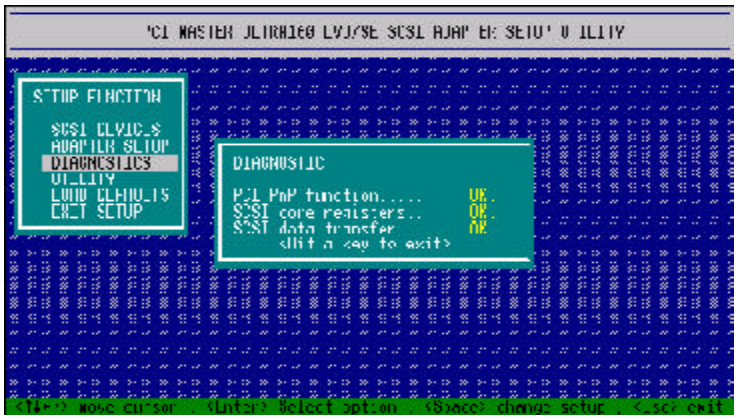

Figure 3-6

3.4 UTILITY

On Figure 3-1, SETUP UTILITY, use ↓ to enter UTILITY. This function contains Preformat, Verify and Quick Erase.

3.4.1 Preformat

Notice that Preformat may shorten a hard drive's life. So, don't preformat unless you cannot use the hard drive normally after formatting.

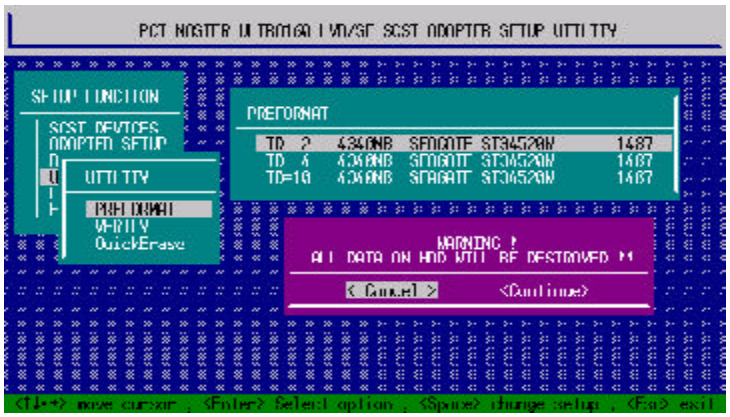

Figure 3-7

3.4.2 Verify

Through Verify if a hard drive is found damaged, a message will appear to ask whether you want to reassign the sector's data to another sector or not.

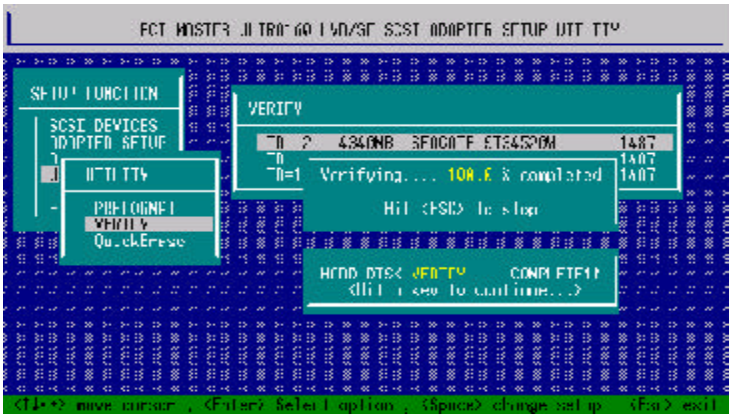

Figure 3-8

3.4.3 Quick Erase

Quick Erase can delete the hard drive's data quickly.

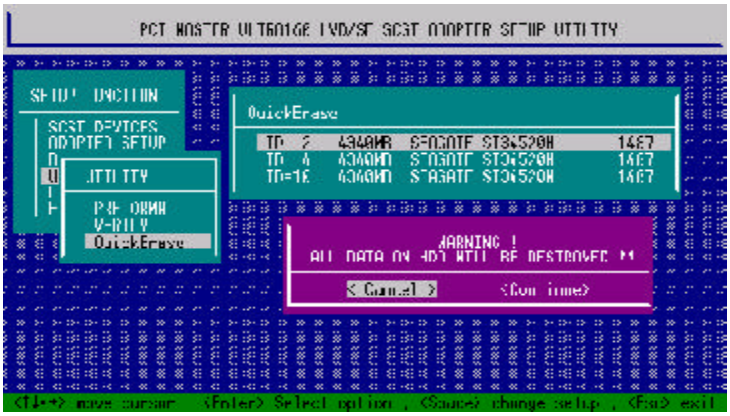

Figure 3-9

3.5 LOAD DEFAULTS

On Figure 3-1, SETUP UTILITY, use ↓ to enter LOAD DEFAULTS. This function can restore AEC-67160D's defaults if you select "Y".

Figure 3-10

3.6 EXIT SETUP

On Figure 3-1, SETUP UTILITY, use ↓ to enter EXIT SETUP. This function lets you finish the BIOS settings. It is equal to pressing ESC. A message like the one indicated in the following figure will ask if you want to update the data and exit.

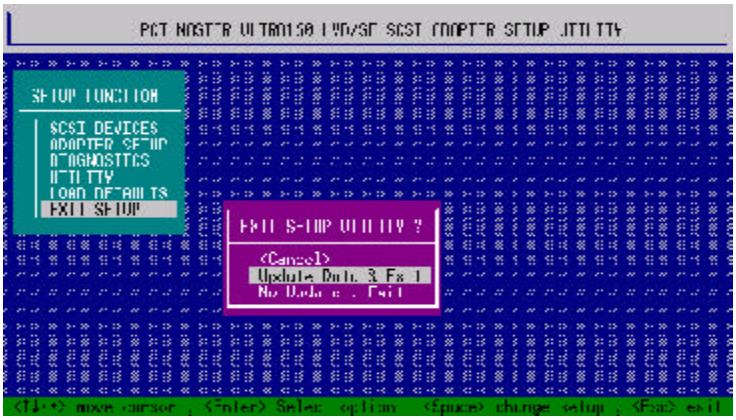

Figure 3-11

Chapter 4 Software Configuration

4.1 Outline

Before using AEC-67160D, you should install its driver into the PC first otherwise you cannot enjoy its complete performance. The driver is stored on the floppy disk inside the package. Its contents and paths are as follows:

BIOS:\
A67160d.bin: The BIOS of AEC-67160D
Aecflash.exe: The command for BIOS upgrade (ex. A:\Aecflash A67160.bin)
Linux:\
7.0\atp870u.c: Driver of AEC-67160D for Red Hat Linux 7.0
7.1\atp870u.c: Driver of AEC-67160D for Red Hat Linux 7.1
(In Linux OS all file names must be in lower case)
Win9X:\
aec67160.mpd: Driver of AEC-67160D for Windows 95/98/ME
aec67160.inf: Install information
Winnt:\
Aec67160.sys: Driver of AEC-67160D for Windows NT
Aec67160.inf: Install information
Win2000:\
Aec67160.sys: Driver of AEC-67160D for Windows 2000
Aec67160.inf: Install information
WinXP:\
Aec67160.sys: Driver of AEC-67160D for Windows XP
Aec67160.inf: Install information

4.2 In Win 95/98/ME

4.2.1 Install the Driver

Please follow the 7 steps listed below to install the driver.

1. Be sure that AEC-67160D has been installed. Then, power on the PC.
2. The system will detect the new device. Click "**Next**".

Add New Hardware Wizard
This wizard searches for new drivers for:
PCI SCSI Bus Controller
A device driver is a software program that makes a hardware device work.
< Back
Next >
Cancel

Figure 4-1

3. Click "**Search for the best driver for your device (Recommended)**".

Add New Hardware Wizard
What do you want Windows to do?
Search for the best driver for your device. (Recommended)
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

Figure 4-2

4. Click "**Specify a location**". The path is A:\Win9X.

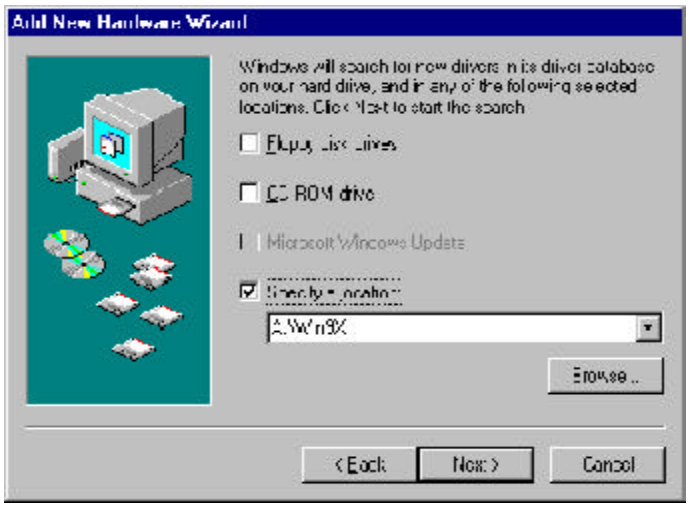
Add New Hardware Wizard
Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
A:\Win9X
Browse...
< Back
Next >
Cancel

Figure 4-3

5. The system will specify a location for the driver as follows. Click '**Next**".

Add New Hardware Wizard
Windows driver file search for the device
ACARD AEC67160 PCI Ultra160 LVD/SE SCSI Adapter
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
A:\WIN9X\AEC67 6C.INF
< Back
Next >
Cancel

Figure 4-4

6. The system will execute the procedures and show completion. Click "**Finish**".

Figure 4-5

7. Restart the PC.

4.2.2 Verify the SCSI Adapter

After restarting the PC, you can confirm if AEC-67160D has been installed successfully by following the 3 steps given below.

1. Double click "**My Computer**". A screen like Figure 4-6 on the next page will appear.

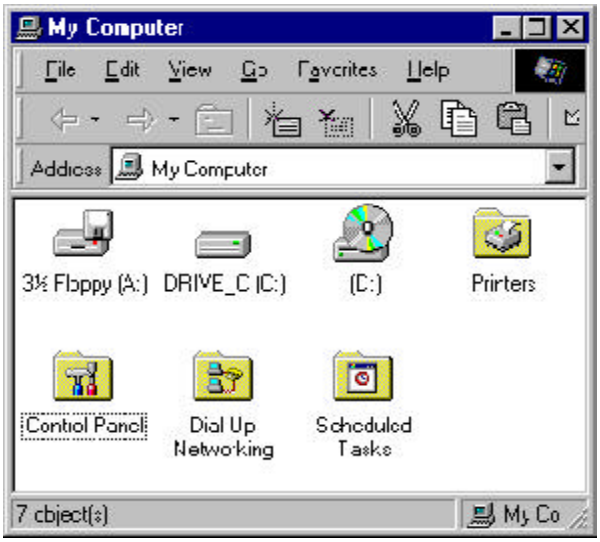

Figure 4-6

2. Double click "**Control Panel**".

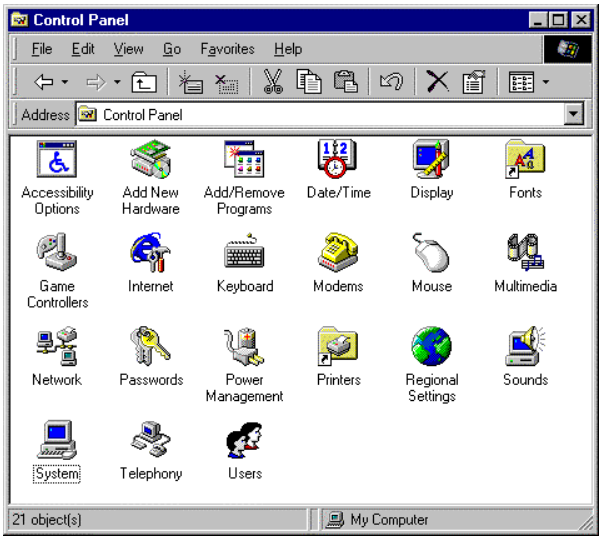

Figure 4-7

3. Double click "**System**". Enter "**Device Manager**" to select SCSI controllers. If you can find the icon of ACARD AEC67160, it means the adapter has been installed successfully.

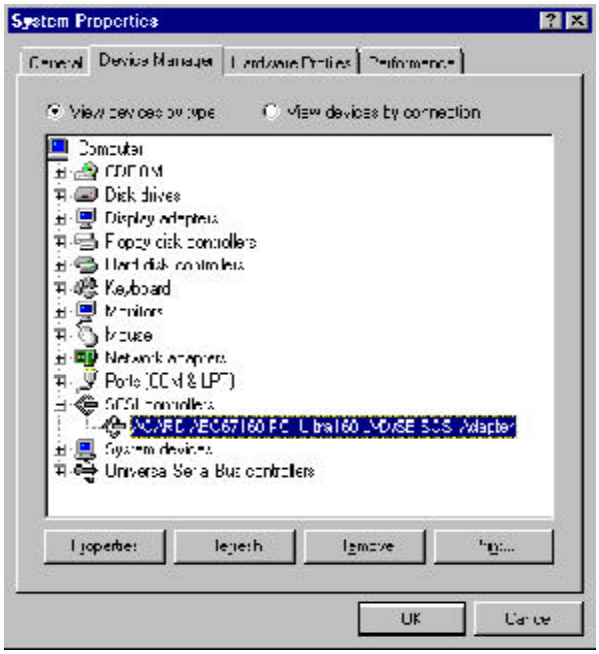

Figure 4-8

4.2.3 Update the Driver

If you need to install the driver again because of failure, or want to update it, you can repeat the steps described in 4.2.1. Besides, you can also follow the 3 steps listed on the next page to install via "**Control Panel**", "**System**", "**Device Manager**".

NOTICE: After you have inserted AEC-67160D into the PCI slot but not installed the driver yet, the icon of ACARD AEC67160 will appear with a yellow question mark (!). That means the installation of the driver failed as shown in Figure 4-9.

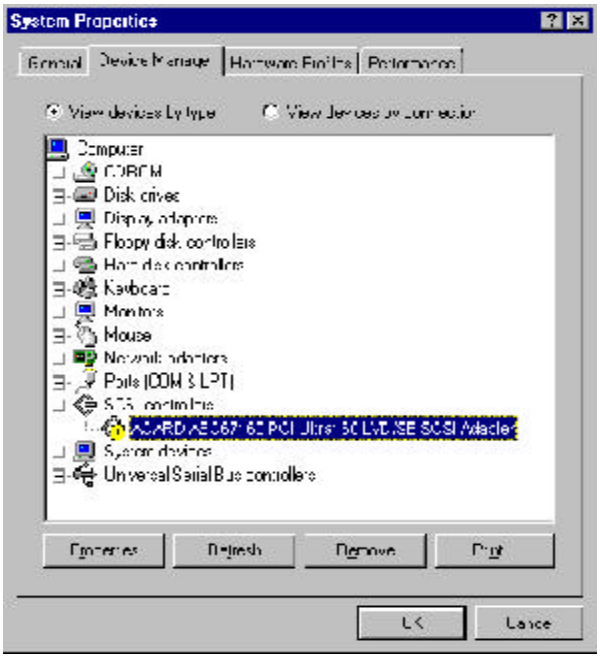

Figure 4-9

1. Move the cursor to "**ACARD AEC67160**", and click "**Properties**".
2. Select Driver and click "**Update Driver**".
3. Repeat step 2 to step 7 as described in 4.2.1.

4.3 In Win NT

4.3.1 Install the Driver

Please follow the 6 steps given below to install the SCSI driver into Windows NT4.0.

1. Double click "**My Computer**" to enter "**Control Panel**".

Figure 4-10

2. Doble click "**SCSI Adapters**".

Figure 4-11

3. Select '**Drivers**", and then click "**Add**". Please select ACARD AEC-671X PCI Ultra/W SCSI-3 Controller.

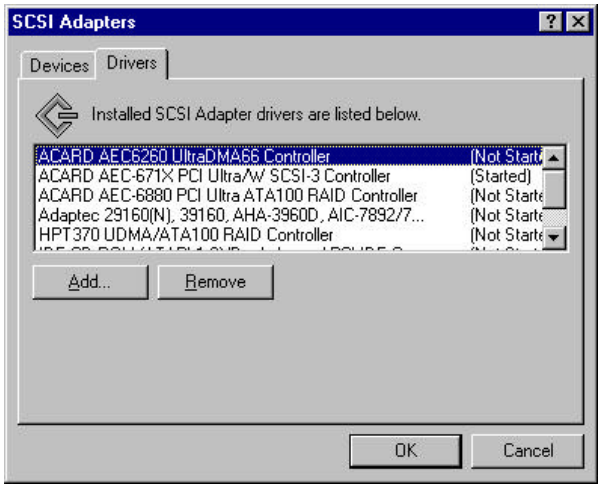

Figure 4-12

4. Click "**Have Disk**" to specify the newly added path of driver.

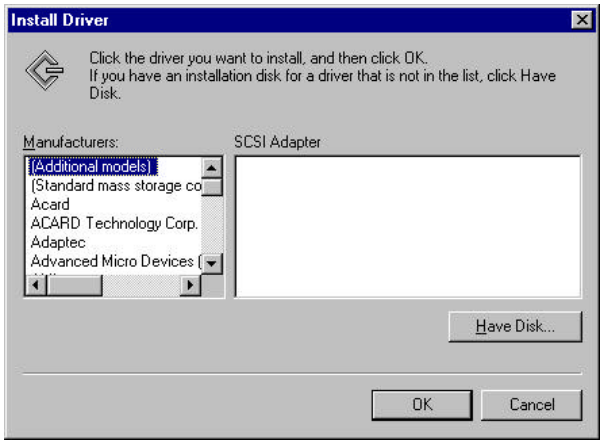

Figure 4-13

5. Keyin A:\Winnt, the driver path of AEC-67160D in Windows NT in the blank as the following figure shows. Or you can click "**Browse**" to select.

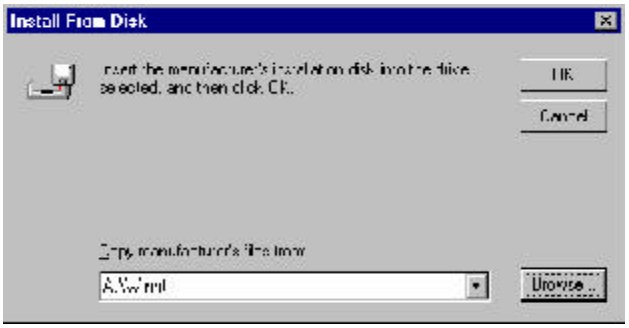

Figure 4-14

6. The model number of AEC67160 will appear after the system completes execution. Then, click "**OK**".

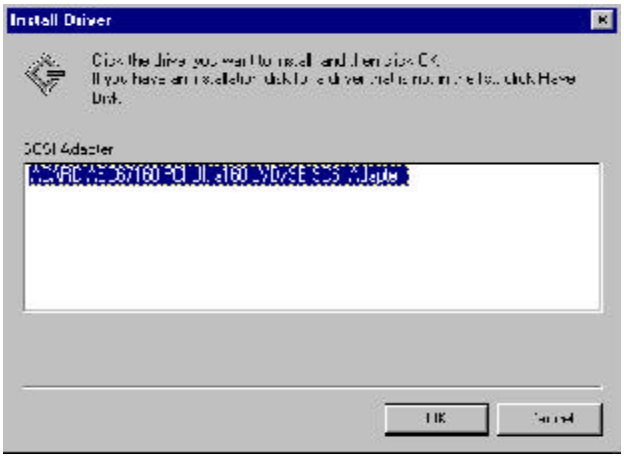

Figure 4-15

4.3.2 Power on from Disk Box

If you want to power on the PC from the Disk Box which is connected to AEC-67160D, you should install Windows NT into the device first.

> **NOTICE**: You are recommended to set the SCSI ID of the Disk Box which is installed with Windows NT as 0.

Please follow the 6 steps described on the next page to install Windows NT into the Disk Box.

1. Place the CD containing Windows NT Operating System into CD-ROM. Power off the PC and restart.
2. After starting the PC from the CD containing Windows NT and entering the blue screen (about 5 seconds), press **F6** to enter the screen of Driver Installation.
3. Press **S** to specify the newly installed AEC-67160D according to the instructions on the screen.
4. Move the cursor to "**Other**" and click "**Enter**".
5. Place the floppy disk containing the driver into Drive A.
6. After the system detects the driver on Drive A, click "**Enter**" to complete.

4.3.3 Verify the SCSI Adapter

Please refer to 4.4.3.

4.4 In Win 2000/XP

Here we simply take Windows 2000 as an example.

4.4.1 Install the Driver

Please follow the 7 steps given below to install the SCSI driver into Windows 2000.

1. After installing AEC-67160D and restarting the PC, the system will detect the newly added device.

Figure 4-16

2. Click "**Search**" and then "**Next**" to let the system search the driver of AEC-67160D.

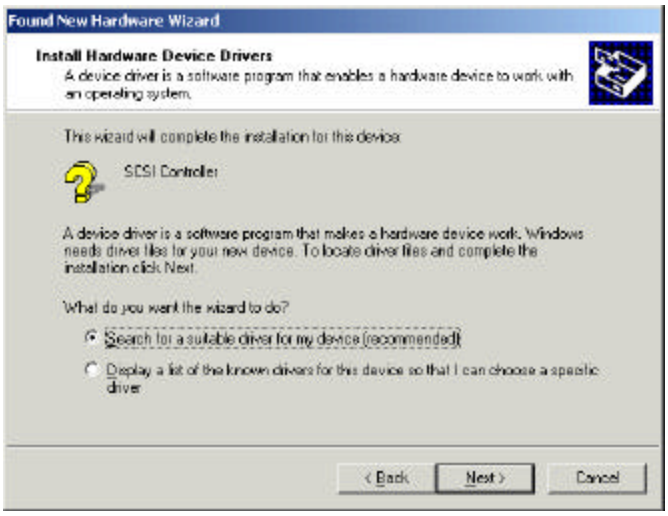
Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
SCSI Controller
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

Figure 4-17

3. Select "**Specify a location**" according to the wizard's instructions, and then click "**Next**".

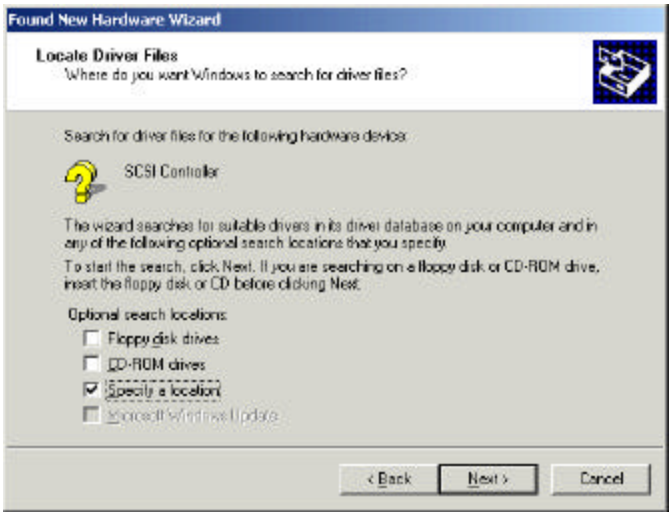
Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
SCSI Controller
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

Figure 4-18

4. Select '**Driver**" from '**Browse**", or directly keyin A:\Win2000 as the following figure shows.

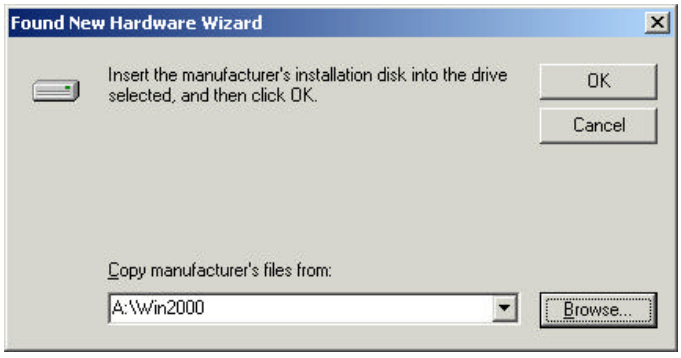

Figure 4-19

5. Confirm the driver path searched by the system, and then click '**Next**".

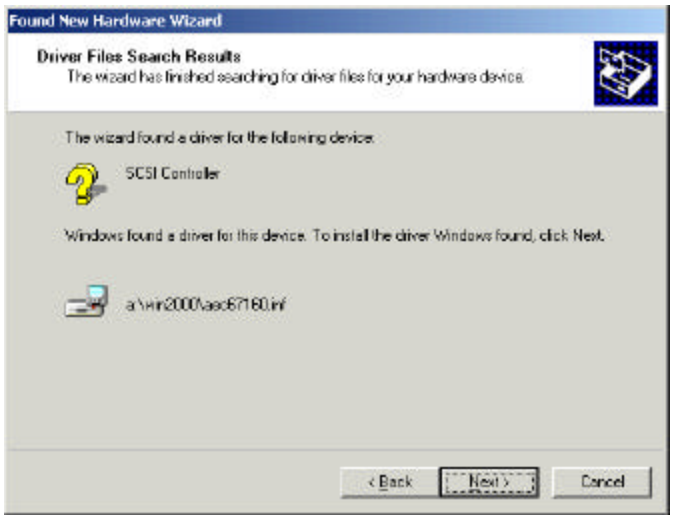
Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
SCSI Controller
Windows found a driver for this device. To install the driver Windows found, click Next.
a:\win2000\aac67160.inf
< Back
Next >
Cancel

Figure 4-20

6. Click "**Yes**" to proceed the follow-up procedures.

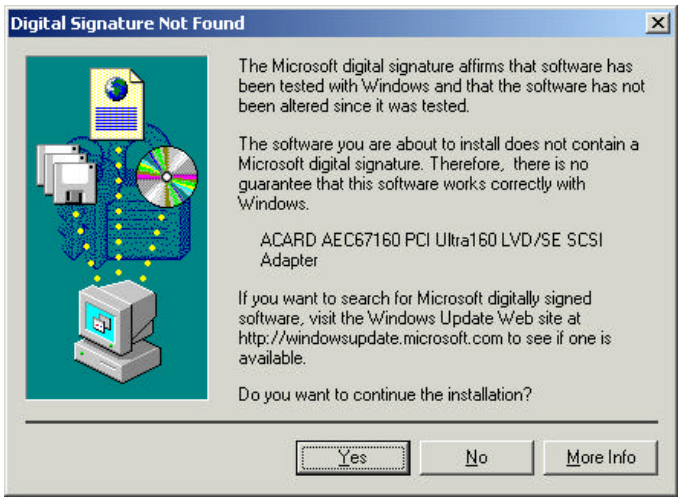
Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
ACARD AEC67160 PCI Ultra160 LVD/SE SCSI Adapter
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

Figure 4-21

7. When the installation of the driver finishes, the screen is as the following figure shows.

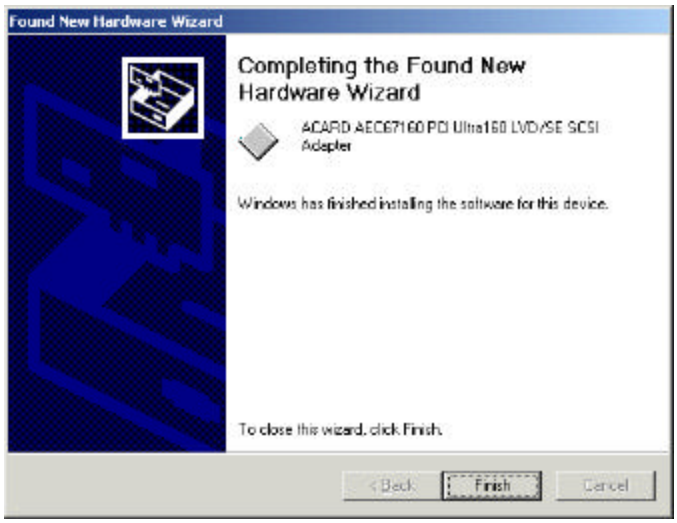
Found New Hardware Wizard
Completing the Found New Hardware Wizard
ACARD AEC67160 PCI Ultra160 LVD/SE SCSI Adapter
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

Figure 4-22

4.4.2 Power on from Disk Box

If you want to power on the PC from the Disk Box which is connected to AEC-67160D, you should install Windows 2000 into the device first.

> **NOTICE**: You are recommended to set the SCSI ID of the Disk Box which is installed with Windows 2000 as 0.

Please follow the 5 steps described below to install Windows 2000 into the Disk Box.

1. Place the CD containing Windows 2000 Operating System into CD-ROM. Power off the PC and restart.
2. After starting the PC from the CD containing Windows 2000 and entering the blue screen (about 5 seconds), press **F6** to enter the screen of Driver Installation.
3. Press **S** to specify the newly installed AEC-67160D according to the instructions on the screen.
4. Place the floppy disk containing the driver into Drive A.
5. After the system detects the driver on Drive A, click "**Enter**" to complete.

4.4.3 Verify the SCSI Adapter

After restarting the PC, please follow the 4 steps listed below to confirm if AEC-67160D is installed well.

1. Double click '**My Computer**", and a screen like the following figure will appear.

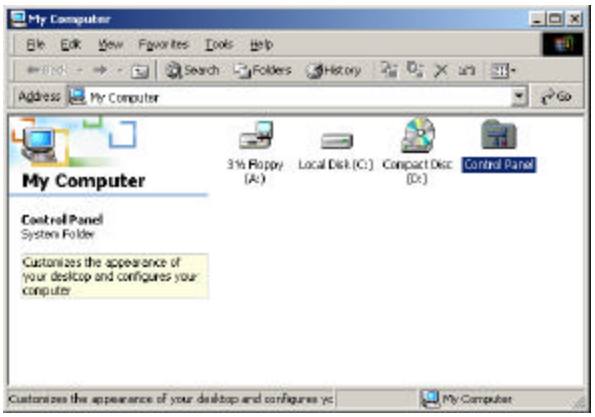

Figure 4-23

2. Double click "**Control Panel**", and then "**System**".

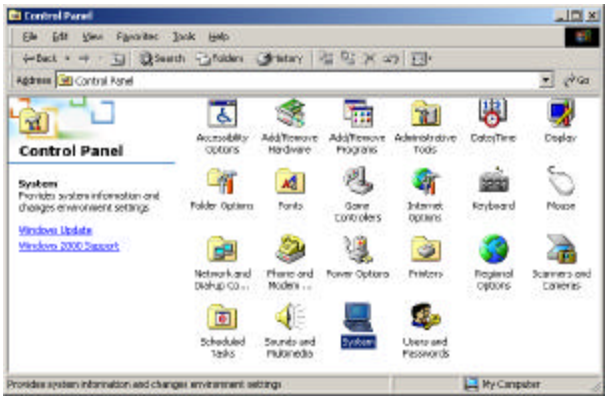

Figure 4-24

3. In the "**System Properties**" screen select "**Hardware**", and then click "**Device Manager**".

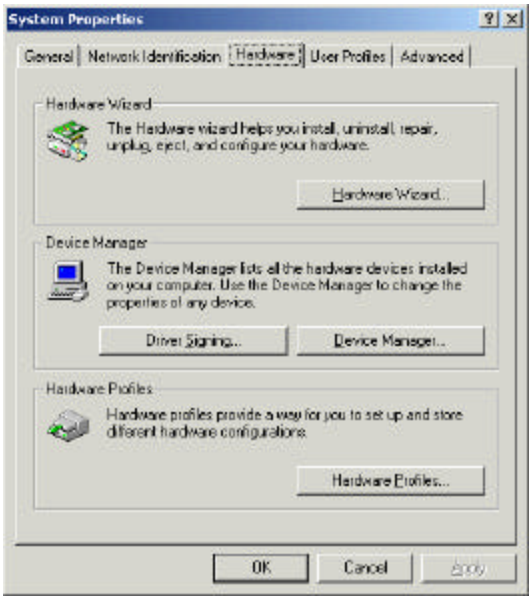
System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel
Apply

Figure 4-25

4. Double click "**SCSI and RAID Controllers**". If you can find the icon of ACARD AEC67160, it means the adapter has been installed successfully.

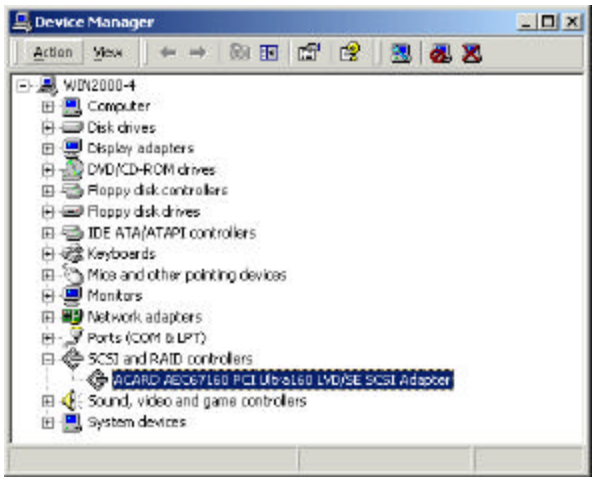

Figure 4-26

Chapter 5 Troubleshooting

After completing all steps aforesaid, if AEC-67160D still works improperly, please check the following items.

1. Inspect the power---Be sure that you have powered on the PC and the connected ARS-3010.

2. Inspect the SCSI adapter---Be sure that AEC-67160D is rightly inserted onto the motherboard.

3. Inspect the repeated SCSI ID---Be sure that each ARS-3010 has a unique SCSI ID. The selection range is from 0 to 15 except 7.

4. Inspect the quality of external SCSI cable---Use an LVD cable of good quality if you don't use the enclosed SCSI cable.

5. Inspect the installed terminator---Be sure that the last ARS-3010 is installed with a terminator.

6. Inspect all cables and power cords---Be sure that all cables and power cords are connected well to the PC and ARS-3010.

Technical Support Form

Email: **support@acard.com**
http://www.acard.com

Model:	AEC-67160D	**F/W Version:**	
System Configuration			
Mainboard			
BIOS version			
Chipset			
Memory			
Display card			
Other I/O card			
OS version			
Hard Disk model/type Capacity			
Hard Disk			
Configuration			
Firmware version			
IDE Device Connection			
CD-ROM model			
CD-R model			
MO or Removable HDD			
Others			
Problem Description			